



Master



Computer Concepts

SPELL MASTER

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1. Introduction and overview

Pitfalls

A spelling checker is a program which checks text against a list of correct words and indicates any words in the text which are not recognised. This does not necessarily indicate that the word is spelt incorrectly, merely that *the spelling checker does not recognise it*. Consequently if vital words are missing from the spelling checker's 'dictionary' then they will be a constant irritation. Most spelling checkers will therefore allow the user to add words in some way.

Because a spelling checker only compares each word against its dictionary, it will not be able to spot words which are spelt correctly but which are being used in the wrong context. For example, the sentence:

"The whether is sunny today"

uses "whether" when the correct word should be "weather", but because the word used does exist, a spelling checker will not spot the mistake. A similar problem can arise from a genuine typing error, for example:

"I didn't eat my super last night."

in which a letter 'p' has been accidentally omitted from the intended word "supper", but once again, because the resulting word "super" does exist, a spelling checker would not spot the mistake.

Describing the pitfalls of a spelling checker may seem a peculiar way to introduce SPELL-MASTER, but it is important to be aware of the limitations in order to appreciate the benefits. Of course the majority of mistakes are caused by pressing the wrong key, rather than an inability to spell correctly. This sort of error is regularly picked up by SPELL-MASTER.

Transposition is the most common typing error, e.g. typing "exmaple" instead of "example". SPELL-MASTER is very good at spotting such mistakes.

Fast, convenient checking

Spelling checkers usually suffer from one, or sometimes all, of three major problems:

- Limited dictionary size
- Slow checking speed
- Inconvenient operation

SPELL-MASTER is designed to overcome all of these problems. Addressing each of these points in turn will provide a good overview of its facilities.

Dictionary size

The on-board dictionary contains approximately 58,000 words, treating each possible ending as a different word. As a rough guide, a base dictionary of about 10,000 words would be adequate for most people, but it would need to be increased to hold words specific to their particular interests.

SPELL-MASTER's dictionary should not therefore show any glaring omissions. The big problem is that different professions and even hobbies include words of little use to outsiders.

Computer programmers use words like EPROM, FIRMWARE, PIXELS, etc. which would probably be quite useless to 99% of the population. However it is vital to be able to add such words to the dictionary for future use in order to prevent them from continually being indicated as possible errors.

A disc-based dictionary is very slow, too slow to be used by many of SPELL-MASTER's facilities. In order to truly extend the dictionary it is necessary to store the new words in a ROM, inside the computer. A sideways ROM must be programmed for several minutes and is difficult to change. For this reason, most BBC Micros are fitted with sideways RAM, which acts like a ROM in all respects except that it can be altered and re-altered by a program, but unfortunately it loses its contents when the computer is switched off. Words can be added to a dictionary in sideways RAM, stored on a disc before switching off, and re-loaded next time. When a sideways RAM dictionary is full, or whenever it is worth keeping, it can be turned into a ROM at very little cost. That ROM, containing up to approximately 3,000 words added by the user, can be fitted into any one of the vacant sockets inside the machine (again, not difficult), providing a permanent extension to the base dictionary.

Extensions do not end there. In fact, there may be as many ROM (or sideways RAM) dictionary extensions fitted as the machine will allow. Typically, it would not be difficult to add an extra 10,000 words but, to be realistic, one person may perhaps have only a few hundred words which are worth adding. However the ability to expand is nevertheless important. By leaving room to expand, the door is left wide open for anyone to create add-on dictionary ROMs. Perhaps in due course there will be specialist dictionary ROMs made available from third party sources that deal with such topics as medicine, mechanics, physics, chemistry, etc., etc... The point is that anyone with a SPELL-MASTER and a simple EPROM programmer can produce permanent add-on dictionaries for use with SPELL-MASTER.

Checking speed

The two commonly used measures of *how good* a spelling checker is are the maximum number of words in the dictionary, and the number of words per minute (WPM) at which it can check. The latter, as is often the case with comparative measures, is not a useful measure unless it is seen in context.

When it is necessary to check the spelling in a document, other spelling checkers will usually require that the text is stored on disc, the spelling checker is loaded, the text is checked and the errors marked in a new file, then the text is loaded back into the word processor for the user to make corrections. Obviously, the speed of actually checking the text is only part of the time (and inconvenience) to be considered.

SPELL-MASTER works efficiently whichever way it is examined. In terms of checking speed, it averages up to 10,000 WPM. But taking into consideration the other time consuming and inconvenient actions required by other spelling checkers, SPELL-MASTER scores highly too. When using WORDWISE, WORDWISE PLUS, INTER-WORD or VIEW word processors (which account for approximately 95% of those in regular use), the text can be checked directly without having to save, check, re-load and correct.

Convenience of use

SPELL-MASTER provides several methods of operation, in order that the most convenient may be chosen for a given situation. Certainly the simplest is the IMMEDIATE CHECKING. When turned on, it monitors each word being typed (without slowing down the typing rate) and simply 'beeps' if an unrecognised word is entered. The user may ignore the warning if the word typed is acceptable, correct the error if the mistake is obvious, ask SPELL-MASTER for the nearest match for the word, or browse through the dictionary, etc. Obviously immediate checking is only useful as text is being typed, and it is of no use at all when it comes to correcting work previously written.

As mentioned earlier, when using WORDWISE, WORDWISE PLUS, INTER-WORD or VIEW word processors, SPELL-MASTER allows all of the current text to be checked without leaving the program. Once the check is initiated, SPELL-MASTER moves to each unrecognised word in the text in turn, allowing any one of three actions: leave the word as it is, add it to a user dictionary, or correct it.

SPELL-MASTER has its own editor. By loading text (produced separately in a word processor) into the editor, it may then be checked and easily corrected, and later re-saved. Compared to checking text directly on the disc, this is much more flexible and very much faster.

Finally, because very large files might exist, such as those created on a second processor, SPELL-MASTER provides a means of checking a file on disc, without needing to load it all into memory. It will mark the unrecognised words on file and make a list of them in its editor.

Two letter words

SPELL-MASTER ignores all words of one or two letters. This was done because it was found to be an irritation when such things as initials, formulae or postcodes were constantly flagged as errors. Therefore it was decided to pass all words of one or two letters as correct.

2. The menu and editor

It is not necessary to enter SPELL-MASTER as a language to use all of its facilities; in fact the majority of spelling checking will be actioned from within a word processor. However, some facilities can only be provided when SPELL-MASTER is the active program. Typing the command:

***SPELL RETURN**

will display the main menu, assuming that SPELL-MASTER is functioning correctly.

WARNING: Entering SPELL-MASTER in this way is like entering other language ROMs such as BASIC. This means that it will delete whatever was in memory before it - so make sure that any work is saved before typing *SPELL. Do not assume that it is possible to return to a word processor after entering SPELL-MASTER, and to find its text intact.

2.1 The main menu

This gives access to the built-in editor, allows modification of dictionary extensions, checking of files on disc, loading of text in the editor, etc. Any star command can also be issued from the menu; these may be commands for other ROMs, such as to catalogue the disc drives, or perhaps any one of SPELL-MASTER's own star commands for searching through the dictionary, solving anagrams, and so on.

The SPELL-MASTER main menu options are described overleaf.

1) Save text from editor

This option will save text currently in the editor on to disc. A prompt will appear asking for the name of a file into which the text will be stored. Any filename may be used according to the conventions of the filing system in use.

If a filename is specified which already exists on the disc, a warning safety-net prompt is issued: " **Replace (Y/N) ?**". Answering by pressing the **N** key will exit *without* saving the file. However, pressing the **Y** key will save the text under the specified filename. Any other key will act as if **N** had been pressed.

If the user is in any doubt as to whether an existing file should be replaced, the **N** key should be pressed to halt the saving process. Then, select option-1 again and enter a different filename. *If a file is accidentally replaced, it cannot be retrieved!*

Note that since the SPELL-MASTER editor is a straight ASCII editor, it can be used to build 'EXEC' or 'BOOT' files by typing in the required text and then using this menu option. There is no 'Spool text' option as this will have the same effect.

2) Load text into editor

This allows text previously created by a word processor, or by SPELL-MASTER itself, to be brought into the editor. Upon selection SPELL-MASTER first checks if any text is already present in the editor. If so an 'Are you sure ? (Y/N)' prompt will appear warning that you are about to overwrite what is already in memory. Replying **Y** will then prompt you for the name of the file to be loaded. This should be entered and the **RETURN** key pressed. The named file is then taken from disc and brought into the editor. Pressing the **ESCAPE** key will enter the editor (see below), showing the text which has been loaded.

If an incorrect filename is entered, an appropriate message such as "No such file" will be issued. It may be necessary at this point to catalogue the disc contents in order to find the correct filename. The exact command required will depend upon the filing system in use, but usually typing:

***CAT RETURN**

while still in the menu will list the names of all the files on the disc.

The editor is designed to cope with text from a variety of sources. If the file contains control codes in addition to any text, then these codes will be displayed as full-stops. Nearly all word processors store codes in the text to indicate special highlights

or other information. For example, INTER-WORD files saved with menu option 1 have a large number of control codes stored at the front of the file for such information as screen colours and menu settings. If such a file is read into the SPELL-MASTER editor, this information will appear as an amount of 'garbage' before the text.

If the text is going to be loaded back into the word processor after it has been checked in the SPELL-MASTER editor, then it is important that the control codes are not altered. If these full stops, indicating the control codes, are deleted or changed then the operation of the word processor may be upset when the file is transferred back.

Generally speaking, it is better to have straight ASCII text containing no control codes. Most word processors can output text like this. INTER-WORD and WORDWISE both have 'spool text' options which will output plain text without control codes. VIEW text can also be 'spooled' in a similar way. Having said this, there is probably no good reason for wanting to load text from the above named word processors into the SPELL-MASTER editor, since the text can be checked directly from within these word processors.

3) Load text at cursor

This option allows text to be merged into text already in the editor. This will prompt for a filename in the same manner as above, then, assuming the filename is correct, it will insert the text from the file into the text in the editor at the current cursor position.

If the file is too long to fit, then an appropriate error message will be displayed.

4) Check a file

It is quite possible that a file will be too large to fit into memory to check within the editor. Files created when using a second processor are one such example. This option provides for checking a file on disc without loading it into memory first. The file need not be large, but if it is small, then it would be more sensible to load it into the editor!

This option checks the file by reading in one word at a time, checking this word against the dictionary, and then outputting the word to a new file. If the word is incorrect then it will be marked in the output file. In addition to this marking of the

output file, the incorrect word will be added to a list in the editor. This option will therefore create a copy of the original file with all the mistakes marked, and at the same time build up a list of these words in the editor.

Once the marked file has been created, it may then be loaded back into the word processor and corrected.

Two filenames are requested. The first is the name of the file to be checked; the second is the name of a file to be created with the unrecognised words marked. If the name of the second file is omitted, then rather than producing a marked copy of the original file, it will mark the original file itself. Usually when marking a copy of a file it will mark the words by preceding them with two special characters '#' (hash and pling). By adding these characters in this fashion the resultant file will be somewhat longer than the original, dependent on the number of marked words. However if marking the original file (by not specifying a second filename) then this option tries to keep the file length unchanged. To do this it cannot add the special mark characters before every word, so instead it replaces the first character of the suspect words with a special character. In this case the back-slash '\'.

There are several reasons for using two methods of marking files. Firstly, it is faster to correct the original file than it is to produce a marked copy. Secondly, correcting the original saves disc space, since no copies of the file are needed. Thirdly, some word processors do not like having their file lengths changed and will be unable to read a marked file if characters are added. SCRIBE is one such word processor.

Having said that, this menu option will rarely be used by most people, since it is only really of use if the text cannot be checked directly from within the word processor. This will be the case if the file is too long (it may have been created on a second processor) or if the text has come from word processors other than those directly supported by SPELL-MASTER. In either case this option really expects the text to be in an ASCII form, so it may be necessary to 'spool' the text in order to make this option work satisfactorily.

5) Search and replace

A facility frequently required in any editor is the ability to search for a specified word and replace it with an alternative word. In SPELL-MASTER it is even more important, since it may be used for replacing all occurrences of a misspelt word by the correct word.

The first prompt asks:

Global or Selective (G/S)?

Pressing **G** selects 'Global', which means that all occurrences of the search string will be replaced without further consultation. However, pressing **S** starts a 'Selective' search and replace operation, in which the user is prompted with the choice of replacing or skipping each occurrence of the search string in turn.

The user is then prompted:

Enter search string:

asking for the word(s) to be found. The user should enter the search string and press **RETURN**. A final prompt:

Enter replacement string:

requests the word(s) which will be used to replace the search string. Once again, the string of characters should be entered, ending with **RETURN**.

Regardless of whether Global or Selective searching is used, the operation will always start at the current position of the edit cursor, and work down the text from that point.

6) Print editor text

This option simply sends a copy of the text held in the editor to the printer. The output is 80-characters wide and avoids splitting words over the ends of lines.

7) Edit user dictionary

Both this option and the next are concerned with moving the contents of user dictionaries to and from sideways RAM into the editor. Therefore some of this text may not make sense until the section on dictionary extensions (Chapter 3) has been read.

If there is more than one user dictionary in the machine, this option will first display a list of these user dictionaries, consisting of the dictionary name followed by the socket number in which the dictionary is held.

The user is then asked which dictionary to edit. Entering the appropriate number (in the range 0 to F) will then copy the entire contents of that user dictionary from sideways RAM into the editor, adding it to any words already present in the editor.

If there is only one user dictionary present then SPELL-MASTER will not ask for a dictionary number, it will simply move the contents of the only user dictionary into the editor.

Once the contents of a user dictionary have been moved in this way to the editor, it is possible to manipulate the dictionary contents using all the normal editor facilities. This means that it is possible to delete words or whole sections of the word list, or to add new words to the list by entering them at the keyboard or alternatively by using the menu option `Load text to cursor`. Although the dictionary is always copied into the editor in alphabetical order, it is not necessary to preserve this order if the dictionary is going to be installed into sideways RAM again.

If there are words already present in the editor before this option is chosen, then the words from the user dictionary are added to these.

8) Install user dictionary

This does the opposite of the previous option. It will move the current contents of the editor into a user dictionary. Note that it sorts words into alphabetical order as it moves the text up into the user dictionary, so that any subsequent editing of the dictionary will always show the words sorted correctly.

Upon selection this option will produce a list of currently resident user dictionaries, listing their names followed by the socket numbers in the range 0 to F, as before. It will then follow this with a list of sockets that contain sideways RAM. For example it may show something like this:

```
My user dictionary (F)
Music extension (4)
```

```
Sideways RAM in sockets F
Install in which socket ? (0-F)
```

This indicates that there are two dictionary extensions fitted to this machine, one in socket 4 the other in socket F, which is also the only sideways RAM present in the machine. In this case it only makes sense to install the editor contents into socket F.

When listing the sockets containing sideways RAM, this option will list all sideways RAMs regardless of their contents. This means that if there is already other data or programs present in sideways RAM, then an attempt to install user dictionaries should not be made.

Note that this option will always replace the entire contents of the sideways RAM with the new words from the editor, rather than adding words to those already present.

Because it sorts as it goes, this operation can take a few seconds.

See the end of section three for more details about editing user dictionaries.

ESC) Edit mode

Pressing the **ESCAPE** key moves you into the SPELL-MASTER editor. Pressing **ESCAPE** from the editor will return to the SPELL-MASTER main menu.

2.2 The editor

The SPELL-MASTER editor is not intended for any one task in particular, but rather as a general purpose environment in which to examine text, or edit user dictionaries. In fact, it may even come in useful for writing and printing quick notes when simplicity and speed are more important than the formatting capabilities of a word processor.

All of the cursor movements have been made compatible with WORDWISE, WORDWISE PLUS and INTER-WORD, and are all very logical and straightforward, even for those who may use other word processors.

Although the editor is certainly not a full word processor, it does contain all of the useful editing features, including deletion forwards and backwards, moving, copying, deleting sections, etc.

Like WORDWISE/PLUS and INTER-WORD, the cursor is always kept on one line, while the cursor keys cause the text to scroll up and down. The number of characters per line depends upon the mode in use and is selectable to be either 40 or 80 per line. On Model-B computers the available modes depend upon the amount of memory already used for storing text, at least 16K of free memory is required for 80-column editing with a Model-B. Fitting a 'shadow RAM' addition will overcome this limitation.

Entering the editor

Pressing the **ESCAPE** key 'toggles' between the editor and the main menu.

If the user is already familiar with the editing controls of WORDWISE, WORDWISE PLUS or INTER-WORD, the following will only serve to confirm existing knowledge.

Entering text

Text is entered by just typing. Like word processors, no **RETURNS** are necessary at the end of lines as the editor will automatically wrap words onto the next line when required. Once text has been entered the cursor may be moved to any position in the text and alterations made. There are many cursor movement keys available when in the editor, and these are listed below. The SPELL-MASTER editor is always in "insert" mode. This means that, wherever the cursor is positioned, any text entered at the keyboard will be inserted into the text already present, the text after the cursor being pushed along as characters are typed.

Cursor movement

Cursor movement is very simple. The controls are arranged in sets of small movements, larger movements, and the largest possible movements. These are achieved by using the cursor keys (arrow keys) on their own, in conjunction with the **CTRL** key, and in conjunction with the **SHIFT** key respectively. They may be summarised easily as follows:

←	Left one character
→	Right one character
↑	Up one line
↓	Down one line

CTRL	←	Left one word
CTRL	→	Right one word
CTRL	↑	Up one screen full
CTRL	↓	Down one screen full

SHIFT	←	To start of current line
SHIFT	→	To end of current line
SHIFT	↑	To start of text
SHIFT	↓	To end of text

The first group of movements, in steps of one character or line at a time, will be the most frequently used. The other options only usefully come into play when a sizeable amount of text has been entered.

Deleting text

There are several deleting operations provided in the editor. The most frequently used will be those for deleting forwards or backwards one character at a time. These can be summarised as:

DELETE	Delete the character to the left of the cursor
COPY	Delete the character at the cursor
CTRL A	The same as COPY

The reason for using both **COPY** and **CTRL|A** for deleting the character at the cursor is simply for compatibility: WORDWISE and WORDWISE PLUS use **CTRL|A** and INTER-WORD introduced the use of the **COPY** key. The latter has been found to be much easier on the whole, so it is recommended that users unfamiliar with either should simply learn that **COPY** deletes the character at the cursor.

The effect of holding down the **DELETE** key is that it deletes progressively to the left, whilst holding down the **COPY** key will delete text to the right of the cursor.

Deleting a blank line requires no special key in the SPELL-MASTER editor, unlike some word processors. Simply positioning the cursor on the start of a line and pressing **DELETE** will remove the line break. Conversely, pressing **RETURN** causes insertion of a line break. Pressing **RETURN** several times will create several blank lines; all of these can then be removed with either of the delete keys. In effect, the editor treats the **RETURN** character like any other, i.e. it can be inserted and deleted as normal. Inserting a **RETURN** in the centre of a line will split the line into two, whilst deleting a **RETURN** will join two lines.

Deleting all of the text in the editor is achieved by moving to the top of the text, placing a marker, moving to the bottom of the text, placing the second marker, then using **f7** to delete the marked section.

Deleting the word at the cursor is achieved by pressing **CTRL D**. Holding it down so that it repeats will delete through the text very quickly.

Moving, copying and deleting sections

Four of the function keys are reserved for handling marked sections. These are treated in exactly the same way as in WORDWISE/PLUS and in a similar fashion to the INTER-WORD editor.

For those not familiar with these word processors, the operations are very simple. Any part of the text currently in the editor may be moved or copied to any other position, or deleted altogether. In order to move a section of text, it is first necessary to mark it in some way. This is done by placing special characters called markers around the required section. To insert a marker at any point in the text the function key **f3** is pressed. Therefore the process of marking a section involves moving to the start of the required section, pressing **f3**, moving to the end of the section and pressing **f3** again. Once this is done, two markers will be present around 'the marked section'.

Once a marked section exists a variety of things can be done. Pressing **f7** will delete all the text between the markers. This will first prompt 'Are you sure? (Y/N)' and pressing anything other than **Y** will prevent the deletion.

Pressing **f8** will move the marked section to the current cursor position. This will have no effect if the cursor happens to be between the markers, since it does not make sense to copy a section into itself.

Pressing **f9** will make a copy of the marked section at the cursor position. Again the cursor may be at any position other than between the two markers when this key is pressed.

If the error 'Markers !' is produced in response to pressing one of these keys, it indicates that the marked section could not be found, either because one or both markers were not present.

The SPELL-MASTER main menu does not contain an option to save the marked section to file. This however can still be done by first deleting the parts of the text not required, then simply saving what remains with menu option 2.

Function keys

The operation of the last three function keys has been described in the previous section, 'Moving, copying and deleting sections'. The positioning of these keys has been kept the same as in WORDWISE/PLUS, but INTER-WORD users should note that, since there is no function key to move a marked section, keys **f7** and **f8** are different. There are two other function keys used in the SPELL-MASTER editor.

Pressing **f0** will change screen mode. Normally the SPELL-MASTER editor tries to operate in an 80 column mode. However it is sometimes useful to be able to edit in 80 columns. Pressing **f0** cycles through the three BBC screen modes; 0,3 and 7. These represent 80 columns by 32 lines, 80 column by 25 lines and 40 columns by 25 lines (teletext mode) .

Function key **f1** is used to select the spelling checker menu. This menu is the same as the one used in the VIEW and WORDWISE word processors to enable the checking of text from within these word processors. This would therefore be used to check any text within the SPELL-MASTER editor. See section 4 for details of the options available from this menu.

Function key summary

f0	Change screen mode
f1	Select spell check menu
f3	Insert one marker
f7	Delete marked section
f8	Move marked section
f9	Copy marked section

3.Dictionary extensions

As explained in the introduction, a spelling checker without the ability to extend its dictionary is of limited use. One of SPELL-MASTER's unique features is its speed of operation. This is due entirely to the ROM based dictionary. No accesses are made to disc, which means that it is not only faster, but more convenient to use than disc based spelling checkers.

We feel that there is no truly satisfactory spelling checker available that uses discs, and for this reason we decided to restrict user dictionaries to sideways RAM or ROM. This provides an elegant method of extending the main dictionary either permanently (with ROM) or temporarily with sideways RAM and ensures that the checking speed does not suffer - the most important consideration.

SPELL-MASTER can support multiple dictionary extensions in either sideways RAM or ROM. Each extension can be separately named, loaded and saved on its own. As you may know, the BBC Micro can support up to 16 sideways ROMs or RAMs. These are normally reserved for application programs such as word processors, but with the advent of cheap sideways RAM it is possible to use this as general data storage space.

Entering `*HELP` at any time will show the programs currently present in sideways RAM or ROM. In addition it will show any user dictionaries currently installed into the machine. These are indicated by the title 'DICTIONARY' followed by a version number. On the next line will be any name given to this dictionary extension, followed by the number of the socket that this extension occupies. In order to keep the socket number as a single character, and in keeping with BBC Master conventions, the socket numbers range from 0 to 9 and A to F, 'A' representing socket 10 and 'F' representing socket 15.

Once a word has been added to a user dictionary extension, it behaves as if it were part of the main dictionary. After SPELL-MASTER has checked the main dictionary for a particular word, it then asks each user dictionary in turn if it recognises the word being checked. Only if none of the dictionaries recognise it will it indicate that this word is misspelt.

Adding words to a user dictionary

There are two ways in which words may be added to user dictionaries, either one at a time or as a group. Words are normally added one at a time from within the word processor's edit mode. Whenever a word is found to be suspect in the text, the user is given the option to add this word to a user dictionary. In order to add a group of words to the dictionary it is necessary to create the list in the SPELL-MASTER editor and use one of its menu options to 'Edit' the required user dictionary. This will copy the contents of a user dictionary into the editor, where groups of words may be added either by typing them or using menu option 3 to 'merge' an already existing list from file into those words in the editor. Following this, the editor contents can then be re-installed back into the required sideways RAM. See section 2 for details of the appropriate menu options, and the end of this section for details of editing user dictionaries.

One point worth bearing in mind is that, whenever a word is added to a user dictionary, it will add the word exactly as specified. Therefore any alternative endings, such as plurals, are not included - it is up to the user to add the words with whatever endings he or she requires.

Creating user dictionaries

It is not possible just to add words into sideways RAM hoping they will form part of a user dictionary - it is necessary to have a user dictionary installed into sideways RAM before any words can be added to it.

Creating a user dictionary for the first time involves 'installing' a blank list of words. In other words, from the SPELL-MASTER's main menu, select option 8 (Install to user dictionary). This lists those sockets containing sideways RAM and asks the user to install a user dictionary into one of these sockets.

Once a user dictionary has been installed, typing *HELP will list all those extension dictionaries present in the machine, whether in RAM or ROM.

Saving user dictionaries

Obviously after a user dictionary has been created, and some words added to it, it is necessary to have some method of saving and loading this for future use. There is a star command,

***DSAVE**, that can be issued from any ROM that will save any specified user dictionary to the current filing system. Normally the command would be followed by a filename under which to save the dictionary, followed by an optional dictionary number. So the syntax follows;

***DSAVE <filename>,<Socket number>**

The dictionary number is the same as the socket number and is in the range 0-F. If the number is omitted then this command will save the highest user dictionary it finds. This enables those with only one user dictionary present to forget about the number.

In fact the filename is also optional. If omitted then SPELL-MASTER will save the dictionary data under the filename "USERDIC".

Loading user dictionaries.

There is a star command, usable from any ROM, that will load a user dictionary from disc (or tape etc.) into the specified sideways RAM bank. The syntax goes;

***DLOAD <filename>,<Socket number>**

In the same way as above, the socket number is optional; if omitted SPELL-MASTER will load the user dictionary into the first free sideways RAM bank. Likewise the filename is also optional; if omitted, this will try to load a file called "USERDIC".

This command will not only load the dictionary into the appropriate sideways RAM bank, but also install it in the ROM table so that the operating system knows about its presence. Therefore it is not necessary to press BREAK after it has been loaded, as might be the case with other methods of loading sideways RAM.

Editing user dictionaries

It is not possible to directly edit a user dictionary while it resides in sideways RAM. However all that is required is to copy the words from the user dictionary into the editor (with menu option 7) , make the necessary changes, then copy the editor contents back into the user dictionary again (menu option 8). See section 2 for details of these menu options.

User dictionary names

Each user dictionary can have a name associated with it. This name will appear whenever ***HELP** is used, or whenever SPELL-MASTER has to list the user dictionaries present in the machine. This name is only for the user convenience and is most useful when multiple user dictionaries are used. Note that whenever user dictionaries are listed, the socket number associated with this dictionary will always be listed, in brackets, after the name.

Whenever a user dictionary is copied into the editor the first line starts with an asterisk. Any text following this asterisk will be used as the title for this dictionary. Therefore in order to give a user dictionary a title, make sure that the very first line of text in the editor starts with an asterisk, followed by the title. After this text has been transferred into sideways RAM (with menu option 8) any words on the same line as the asterisk will appear as the dictionary name. After installing a user dictionary in this way, typing ***HELP** should verify the new name.

4. Checking text in word processors

The following text applies to using SPELL-MASTER from all the word processors supported by this ROM, and the SPELL-MASTER editor itself. The only difference is in the way the various features are called. For example INTER-WORD has a menu already devoted to the spelling checker, activated by **CTRL f8**. WORDWISE/PLUS and VIEW, on the other hand, have SPELL-MASTER menus activated by **CTRL J**.

Immediate Checking

In this mode all text is checked as it is typed. SPELL-MASTER monitors all key presses and normally only checks the word as the space is typed following that word. If the word is not found in the main dictionary or any of the user dictionaries, then the computer will bleep to indicate that it thinks this word is faulty.

However, SPELL MASTER can also check text as it is being edited. In order to do this, it monitors all key presses and will check the word at the cursor after any alterations are made and an attempt is made to move off this word. Therefore it is quite possible to move to a word already entered, make changes to this word, and then move the cursor away. If the computer bleeps as you move off the word, then this indicates the word was unacceptable.

SPELL-MASTER only bleeps when doing immediate checking. It would not be appropriate for SPELL-MASTER to attempt to correct the word, or force you to correct the word at this stage as it would be too disruptive. Therefore this bleep serves as a warning. Usually the user would make a mental note that it has bleeped, and go back and correct the word at the end of the current sentence, or after the current piece of text has been entered. Often the mistakes are obvious typing errors or other simple mistakes which can be corrected without further assistance from SPELL-MASTER. If the mistake is not obvious then the best course of action is to move back onto the word and use **CTRL C** to re-check the word. Doing this allows the word to be corrected from the dictionary, or added to a user dictionary. See below under 'Check word at cursor'

Check entire text

Once selected, this option will start checking all the text currently in memory from the top. Whenever it comes across a word it does not recognise, it displays a window over the text showing the incorrect word and listing four possible options. These are:

- 1) Ignore
- 2) Add word to dictionary
- 3) Correct word

ESC End check

Pressing the appropriate number will select the corresponding option. Pressing **ESCAPE** will abort the check and return back to the word processor. In fact there is a short-cut to option three; if any alphabetic character is typed at this point it will assume that option three was required, since this is the only option that requires further input to be typed.

The first option will cause SPELL-MASTER to ignore the word in question, and move onto the next word not found in the dictionary.

The second option 'Add word to dictionary' will add the word in question to a user dictionary if present. If no dictionary is currently loaded into sideways RAM then selecting this option will simply produce the error "Can't add word". This error will also occur if the RAM has a write protect switch preventing any data from being written into the RAM. Most sideways RAMs do not have such a switch, for example those built into the Master range of computers. Some RAM boards might also only allow you to write to one bank at a time, like the Solidisk 256K board.

Note that it is necessary to have a user dictionary already installed into sideways RAM in order to add words to the dictionary. This would normally be done prior to using SPELL-MASTER. See under the star command 'DLOAD' or menu option 8 (Install user dictionary) for details of how to load a user dictionary into sideways RAM.

Once a word has been added in this fashion, it immediately becomes part of the dictionary. This means that, should the word occur again in the text, it will not now be flagged as unrecognised.

The third option 'Correct word' is the most powerful. Basically this lets the user find the correct word in the dictionary and will automatically replace the misspelt word with the selected alternative. Then it will automatically replace any subsequent occurrences throughout the rest of the text from the position of the misspelt word.

Initially, this option will clear the small window and list a number of words closest alphabetically to the word in question. By using the up and down cursor keys it is possible to scroll through the dictionary and so find the correct spelling. Once the word has been located, pressing **RETURN** will cause the word in the text to be replaced with the selected one. SPELL-MASTER will try and preserve the case of the old word, so if the word was all in upper case, the new word will be inserted all in upper case etc.

Obviously having 58,000 words in the dictionary means that it can take a long time to find the correct word. For this reason there is a variety of short cuts available when scrolling through the dictionary list. These are summarised below:

SHIFT ↑	Move to start of previous 1st letter category
SHIFT ↓	Move to start of next 1st letter category
CTRL ↑	Move to start of previous 3rd letter category
CTRL ↓	Move to start of next 3rd letter category

Therefore if you are currently on the word **food** and you wish to move to the start of the 'G' category, simply press **SHIFT** ↓. Similarly pressing **CTRL** ↑ would change the third letter moving you to the start of **fon**. Put more simply, scrolling through the dictionary with **CTRL** and the arrow keys will move by small amounts, and with **SHIFT** will move by large amounts through the list of words.

While it is all very well moving through the dictionary in this way, it can still be difficult to locate the word in question. Therefore there is a third, and more direct, way to find any position in the dictionary. This is done by typing the first letter or letters of the word being searched for.

If the correct spelling of the word is known, then simply type the letters. As each new letter is typed you will be moved through the dictionary gradually getting closer to the required word. Once all the letters have been entered, the window should be showing the

correct word and, as before, pressing **RETURN** at this point will put this word into the text in place of the one being corrected.

While this may sound complicated, it is very much easier and obvious in use. To recap; after selecting the 'Correct word' option from the list it is necessary to find the required word from the dictionary list. It is possible to scroll up and down the list in the normal fashion, or to locate a specific word by just typing the characters at the keyboard. Pressing **RETURN** will then replace the word in the text with the selected one from the list.

One point that will not be clear until you have tried using this option is that, once you have started to enter characters, in order to move to a specific word in the dictionary, then the computer will expect further key presses to correspond to further characters in the word being sought. Therefore in order to tell the computer you want to look for a completely different word it is necessary to either scroll through the dictionary by at least one word, or press the space bar. After this has been done, then the next character entered will be used as the first letter of a new word to be searched for, rather than another letter of an existing word.

As before it is possible to abort the check at this point by pressing **ESCAPE**; this will return to the previous three option menu. In addition it is possible to exit all the way back to the editor by pressing either the right or left arrow keys.

Note; this option behaves slightly differently in the three different word processors. When using it from within INTER-WORD, any suspect word is shown completely in context by displaying the entire screen full of text around the word. When using VIEW and WORDWISE/PLUS the word is still shown in context in the centre of the screen, but with only three lines of text around the word. Also, the formatting of the words shown will not necessarily reflect the formatting in the editor.

Check marked section

This is like the previous option except it will only check text within the marked section. See the relevant word processor manuals for details of how to mark sections of text.

Checking from current cursor position.

It is sometimes useful to be able to only check text from the current cursor position onwards. This may be done by typing **CTRL V** while in the editor of any of the word processors.

This option behaves exactly like the previous "Check entire text" except that it does not move to the start of the text first. Therefore, whenever it finds a suspect word, a window offering the same four choices as above is displayed. See above for details.

Check word at cursor.

Pressing **CTRL C** while in the word processor will cause SPELL-MASTER to check only the single word at the cursor. If the word is found to be correct, then the computer emits a subdued low-pitched bleep. If the word is not correct the standard four options are presented to the user; Ignore word, Add word to dictionary, Correct word or ESC. Selecting one of the options will act as described above.

In practice this **CTRL C** is used quite often. If, for example, you do not like using the immediate check feature (the continual bleeps may be too much) then this 'check word option' can be used on words that you suspect might be wrong. Also probably the simplest way to add a new word to a user dictionary, is to enter the word, then move the cursor back onto it and type **CTRL C**. If the word is not present then subsequently pressing the **2** key will add this word to the dictionary.

Browsing through the dictionary.

It is possible to browse through the dictionary at any time while in the word processor editor. Pressing **CTRL B** will bring up the small window over the text showing the first word in the dictionary. From this point it is possible to scroll through the dictionary as described above when a word is being corrected. This means that, not only do the cursor keys allow fine or coarse movement through the dictionary, but it is possible to enter characters at the keyboard in order to move to any specified part of the dictionary.

Once a word has been located then pressing **RETURN** will cause this word to be output to the word processor at the cursor position.

5. Checking text in INTER-WORD

Inter-Word is different from all the other word processors in that it already has built in support for SPELL-MASTER, namely by having one pull down menu devoted to the spelling checker.

The pull down menu.

Once SPELL-MASTER is fitted, the spell check menu will list 5 new options not normally available. (This menu is accessed in the normal INTER-WORD way either from the main **f0** menu or directly by pressing **CTRL f8**)

These options are fairly self explanatory, but are:

Continuous check: ON/OFF

Check entire text

Check Marked section

Browse

Check word at cursor

Any of these options may be selected in the normal INTER-WORD fashion by moving the highlight bar on to the required option with the cursor keys. The Continuous check option may be turned on and off by using the right and left arrow keys, the other options are selected by pressing return when over the required option.

Like most INTER-WORD settings, the 'Continuous check; on/off' setting is saved with the document when using menu option 1.

Additional control keys.

The action of the particular options has been explained in the previous section. Note that in addition to the menu options available from within INTER-WORD, **CTRL C**, **CTRL V** and **CTRL B** are operational from the edit mode. As explained in the previous section, these allow the word at the cursor to be checked, and all text from the current cursor position onwards to be checked.

6. Checking text in WORDWISE/PLUS and VIEW

Workspace claims.

In order for SPELL-MASTER to work directly from within these word processors it is necessary for the ROM to 'claim' one page of workspace. On a normal BBC B this means that there will be 256 bytes less room for word processors and other language ROMs, for example, 'PAGE' in BASIC will be set 256 bytes higher.

SPELL-MASTER is as intelligent as it can be about this claiming of workspace. If the machine does not have a WORDWISE/PLUS or VIEW fitted then this page is not required and will not be claimed. If SPELL-MASTER is being used in a MASTER or MASTER COMPACT then the page is claimed elsewhere and will not affect 'PAGE' or any application ROMS.

SPELL-MASTER claims this page by default on switch-on. This should not affect or interfere with other software that is correctly written. However some games may object to this page being claimed and will not run. Therefore we have provided a method of preventing this page being claimed. Two star commands are provided, *WORKOFF and *WORKON. If a particular game, or other software will not run correctly, typing *WORKOFF followed by pressing the **BREAK** key will release the workspace usually used by SPELL-MASTER. After this, SPELL-MASTER cannot be used from within VIEW or WORDWISE/PLUS until the page has been re-claimed. This can be done by typing *WORKON followed by a **BREAK**.

The SPELL-MASTER menu.

Typing **CTRL J** while in the WORDWISE/PLUS or VIEW editor will cause a window to appear at the top of the screen listing the following options.

SPELL-MASTER MENU

- 1: Check entire text
- 2: Check marked section
- 3: Browse
- 4: Check from cursor
- 5: Turn immediate check on

Pressing the appropriate number will select the required option, pressing ESC will return to the editor. A full description of these facilities is given in chapter 4. Please note that when you use option 1 to check the entire text, the cursor will be moved to the top of the text in WORDWISE/PLUS. It is left alone in VIEW

Immediate checking

Menu option 5 turns the immediate checking on, after which all text entered or edited is checked as described in section 4. Subsequent display of this menu will show that menu option 5 can be used to turn immediate checking off again.

8. Additional 'star' commands

SPELL-MASTER adds a number of 'star' commands to the machine. Because these are like all other star commands they can be used from any language ROM. For example, in BASIC the commands can be typed in immediate mode, or included within BASIC programs. From within WORDWISE, star commands can be issued from the main menu, and from within VIEW they can be issued from the command mode. Like most star commands on the BBC Micro, these can be abbreviated to the shortest number of characters that uniquely identify this command, and can be entered either as upper or lower case text.

For technical reasons, mostly speed related, it was not practical to make some of the following commands search through both the main dictionary and user dictionaries. Therefore commands like *ANAGRAM , *CROSSWORD and *CHECK only refer to the main ROM based dictionary.

***ANAGRAM <string>**

This expects a collection of characters to follow the command. It will then search through the entire ROM dictionary and list all words that contain only those characters.

For example:

*ANAGRAM AETL

RETURN

LATE

TALE

TEAL

***BROWSE <string>**

This allows direct access to the SPELL-MASTER browse window from other software such as BASIC. The <string> parameter is used to specify the start word in the dictionary. Once issued, the normal browse window will appear in the top left corner of the current screen, listing a group of words starting from the specified word. All the normal browse functions are usable, such

as **CTRL** up or down arrow to move 1st letter categories. See the end of section 4 for more details.

This browse option is really only provided to enable the dictionary to be scanned. This command does look at both the main dictionary and user dictionaries, and will interleave words from all dictionaries when scrolling. Pressing **ESCAPE** or **RETURN** will return to the language.

***CHECK <string>**

This command is used for listing words or groups of words from the main dictionary. The <string> following the command should contain the first few characters of the word or words being looked for. This string must consist of at least the first two characters in order to narrow the resultant list down to a reasonable size.

The string can accept one trailing 'wildcard' character, the asterisk '*'. This represents any group of characters after this point. A few examples should make this clear.

***CHECK COM* RETURN**

would list all words in the dictionary that start with 'COM'. If no asterisk follows the characters then this will search the dictionary for an exact match, and list the word if present. Therefore this command has two uses; either to list a collection of words with a common start, or to check that one particular word is present in the dictionary.

For example:

***CHECK COMPUTOR**

would generate the error "Not found" since this word is not the correct spelling.

In addition to the asterisk another single character 'wildcard' is allowed, represented by the hash symbol '#'. This cannot occur within the first two characters for this command, but any number of hash characters may be placed elsewhere in the string. Each hash would represent any single character.

For example

***CHE. FR#A* RETURN**

would list all words that start with FR and have A as their fourth letter.

This command is quite good for finding a specific word when only the first few characters are known, or when one or more particular characters in the word are not known.

*CHE. RELEV#NT **RETURN**

Another example:

This is because the asterisk wildcard should always occur at the end of the word.

***DLOAD <filename>,<ROM number>**

This command will load a user dictionary from the current filing system into one bank of sideways RAM. If the RAM or ROM number is not included then this will load it into the first free bank of sideways RAM it can find. If the filename is not present then it will try to load a file called "USERDIC". If the specified bank is not RAM, the message 'No sideways RAM' will appear. If the key pressed is not a valid bank number, the message will be 'Dictionary not copied'.

***DSAVE <filename>,<ROM number>**

This command will save a user dictionary from a specified sideways RAM bank to the current filing system. If the ROM number is not included then this will save the highest priority user dictionary. If the filename is not included then it will be saved under the default name USERDIC. See section 3 for more details of dictionary extensions.

If only one user dictionary is used and the machine only has one bank of sideways RAM fitted then it is possible to completely omit the parameters. So all that is required would be *DSAVE or *DLOAD commands on their own.

***FUZZY <string>**

This rather unusual command will list all words that are approximately similar to the <string> parameter. It is most useful when trying to find the correct spelling of a word when you only have a rough idea. This command does a crude 'sound-alike' check against all words in the dictionary. It often produces a list of words with some that seem nothing like the one you are looking for, but it will nearly always include the desired word.

For example:

```
*FUZZY ONOMATAPIA RETURN  
ONOMATOPOEIA
```

It is generally possible to enter the word spelt as it sounds and SPELL-MASTER will list the correct spelling. Sometimes this list will contain a number of similar words. Sometimes, as in the above example, it will list just the correct one.

Some more examples:

```
*FUZZY PROSESOR RETURN  
PROCESSOR  
PURCHASER
```

***FUZZY ANOUNSMET RETURN**
ANNOUNCEMENT
ANNOUNCEMENTS

***WORKON/*WORKOFF**

On machines fitted with WORDWISE/PLUS or VIEW it is necessary for SPELL-MASTER to claim 256 bytes of workspace in order to work directly with these word processors. Normally this workspace will always be claimed. However it may sometimes be necessary to prevent this. Therefore these two commands are provided. After turning the workspace on or off it will be necessary to press **BREAK** in order to tell the operating system about the change.

If the machine has neither WORDWISE/PLUS nor VIEW fitted then this workspace is not claimed, and these commands will not be useful. Also if using SPELL-MASTER in a BBC Master or Master Compact then the workspace will be hidden from the user and so these commands should not be necessary.

